

## FLIGHT SUMMARY REPORT

**Flight Number:** 98-095  
**Calendar/Julian Date:** 13 July 1998 • 194  
**Sensor Package:** Wild Heerbrugg RC-10  
Hycon HR-732  
Multispectral Atmospheric Mapping  
Sensor (MAMS)  
**Area(s) Covered:** Dryden Flight Research Center, CA

**Investigator(s):** Shelton, NASA-DFRC

**Aircraft #:** 806

### SENSOR DATA

<b>Accession #:</b>	05269	05270	-----
<b>Sensor ID #:</b>	076	019	102
<b>Sensor Type:</b>	RC-10	HR-732	MAMS
<b>Focal Length:</b>	12" 304.89 mm	24" 609 mm	-----
<b>Film Type:</b>	Aerochrome IR SO-134	Aerochrome IR SO-134	-----
<b>Filtration:</b>	Wratten 12	Wratten 12	-----
<b>Spectral Band:</b>	510-900 nm	510-900 nm	-----
<b>f Stop:</b>	11	16	-----
<b>Shutter Speed:</b>	1/325	1/250	-----
<b># of Frames:</b>	43	82	-----
<b>% Overlap:</b>	60	60	-----
<b>Quality:</b>	Poor	Good	Good
<b>Remarks:</b>	Subtract 27 seconds for correct UTC	1/2 stop overexposed	

## **Airborne Science Program**

The Airborne Science Program at NASA's Dryden Flight Research Center, Edwards, California, operates two ER-2 high altitude aircraft in support of NASA earth science research. The ER-2s are used as readily deployable high altitude sensor platforms to collect remote sensing and in situ data on earth resources, celestial phenomena, atmospheric dynamics, and oceanic processes. Additionally, these aircraft are used for electronic sensor research and development and satellite investigative support.

The ER-2s are flown from various deployment sites in support of scientific research sponsored by NASA and other federal, state, university, and industry investigators. Data are collected from deployment sites in Kansas, Texas, Virginia, Florida, and Alaska. Cooperative international scientific projects have deployed the aircraft to sites in Great Britain, Australia, Chile, and Norway.

Photographic and digital imaging sensors are flown aboard the ER-2s in support of research objectives defined by the sponsoring investigators. High resolution mapping cameras and digital multispectral imaging sensors are utilized in a variety of configurations in the ER-2s' four pressurized experiment compartments. The following provides a description of the digital multispectral sensor(s) and camera(s) used for data collection during this flight.

## **Camera Systems**

Various camera systems and films are used for photographic data collection. Film types include high definition color infrared, natural color, and black and white emulsions. Available photographic systems are as follows:

- Wild-Heerbrugg RC-10 metric mapping camera
  - 9 x 9 inch film format
  - 6 inch focal length lens provides area coverage of 16 x 16 nautical miles from 65,000 feet
  - 12 inch focal length lens provides area coverage of 8 x 8 nautical miles from 65,000 feet
- Hycon HR-732 large scale mapping camera
  - 9 x 18 inch film format
  - 24 inch focal length lens provides area coverage of 4 x 8 nautical miles from 65,000 feet
- IRIS II Panoramic camera
  - 4.5 x 34.7 inch film format
  - 24 inch focal length lens
  - 90 degree field of view provides area coverage of 2 x 21.4 nautical miles from 65,000 feet

## **Multispectral Atmospheric Mapping Sensor**

The Multispectral Atmospheric Mapping Sensor (MAMS) is a modified Daedalus Scanner flown aboard the ER-2 aircraft. It is designed to study weather related phenomena including storm system structure, cloud-top temperatures, and upper atmosphere water vapor. The

scanner retains the eight silicon-detector channels in the visible/near-infrared region found on the Daedalus Thematic Mapper Simulator, with the addition of four channels in the infrared relating to specific atmospheric features. The spectral bands are as follows:

<u>Daedalus Channel</u>	<u>Wavelength, <i>mm</i></u>
1	LSBs for Channels 9-12
2	0.45 - 0.52
3	0.52 - 0.60
4	0.57 - 0.67
5	0.60 - 0.73
6	0.65 - 0.83
7	0.72 - 0.99
8	0.83 - 1.05
9	6.20 - 6.90 optional
10	6.20 - 6.90 optional
11	10.3 - 12.1
12	12.5 - 12.8

Spatial Resolution: 50 meters from 19.8 km (65,000 ft.)  
 Total Field of View: 85.92 degrees  
 IFOV: 2.5 mrad

Notes: Channels 9-12 are digitized to 10-bits; all others are 8-bit. Blackbody sources are carried for IR calibration.

MAMS data will not be archived at EROS Data Center because this is an experimental system with low spatial resolution and unique spectral characteristics. As all scenes will be primarily cloud-covered there would be little terrestrial application for the data. Further information concerning the data can be obtained from principal investigator, Gregory S. Wilson, Atmospheric Effects Branch, George C. Marshall Space Flight Center, National Aeronautics and Space Administration, Marshall Space Flight Center, Alabama 35812-5001.

### **Data Availability**

The U.S. Geological Survey's EROS Data Center at Sioux Falls, South Dakota serves as the archive and product distribution facility for Airborne Science Program aircraft acquired photographic and digital imagery. The photographic archive consists of photography acquired by the program from 1971 to April 1996. For information regarding photography and digital data (including areas of coverage, products, and product costs) contact EROS Data Center, Customer Services, Sioux Falls, South Dakota 57198 (Telephone: 605-594-6151).

As of April 1996 the EROS Data Center no longer receives an archive copy of newly acquired Airborne Science Program photography. Original photography is archived with the Airborne Sensor Facility at Ames Research Center. A user copy of the photography is provided to the principal investigators for each flight. Principal investigators are cited on the first page of their respective flight summary reports. For information regarding photography acquired from April 1996 to the present contact the Airborne Sensor Facility as follows:

### **Flight Documentation and Data Archive Searches**

The following is the web site for flight documentation as published by the Airborne Sensor Facility at NASA Ames Research Center:

<http://asapdata.arc.nasa.gov/er-2fsr.html>

Additional information regarding flight documentation to include data archive searches, data availability, sensor parameters, and areas of coverage may be obtained from the following:

Airborne Sensor Facility  
MS 240-6  
NASA Ames Research Center  
Moffett Field, CA 94035-1000  
Telephone: (650)604-6252 (FAX 4987)

# CAMERA FLIGHT LINE DATA

## FLIGHT NO. 98-095

Accession # 05269

Sensor # 076

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	9152-9166	16:51:37	16:58:12	66107/20149	Clear
C - D	9167-9179	17:01:17	17:06:55	68531/20888	Clear
E - F	9180-9193	17:13:26	17:19:31	68607/20911	Clear
H	9194	17:27:00	17:27:00	67400/20544	Clear; Actis California
NOTE: FILM QUALITY SEVERELY DEGRADED, EXPOSED TO HEAT.					

# CAMERA FLIGHT LINE DATA

## FLIGHT NO. 98-095

Accession # 05270

Sensor # 020

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	0001-0029	16:50:54	16:57:26	67500/20574	Clear
C - D	0030-0054	17:00:31	17:06:13	67500/20574	Clear
E - F	0055-0080	17:12:37	17:18:36	67500/20574	Clear
G - H	0081-0082	17:26:10	17:26:24	67500/20574	Clear; Actis California

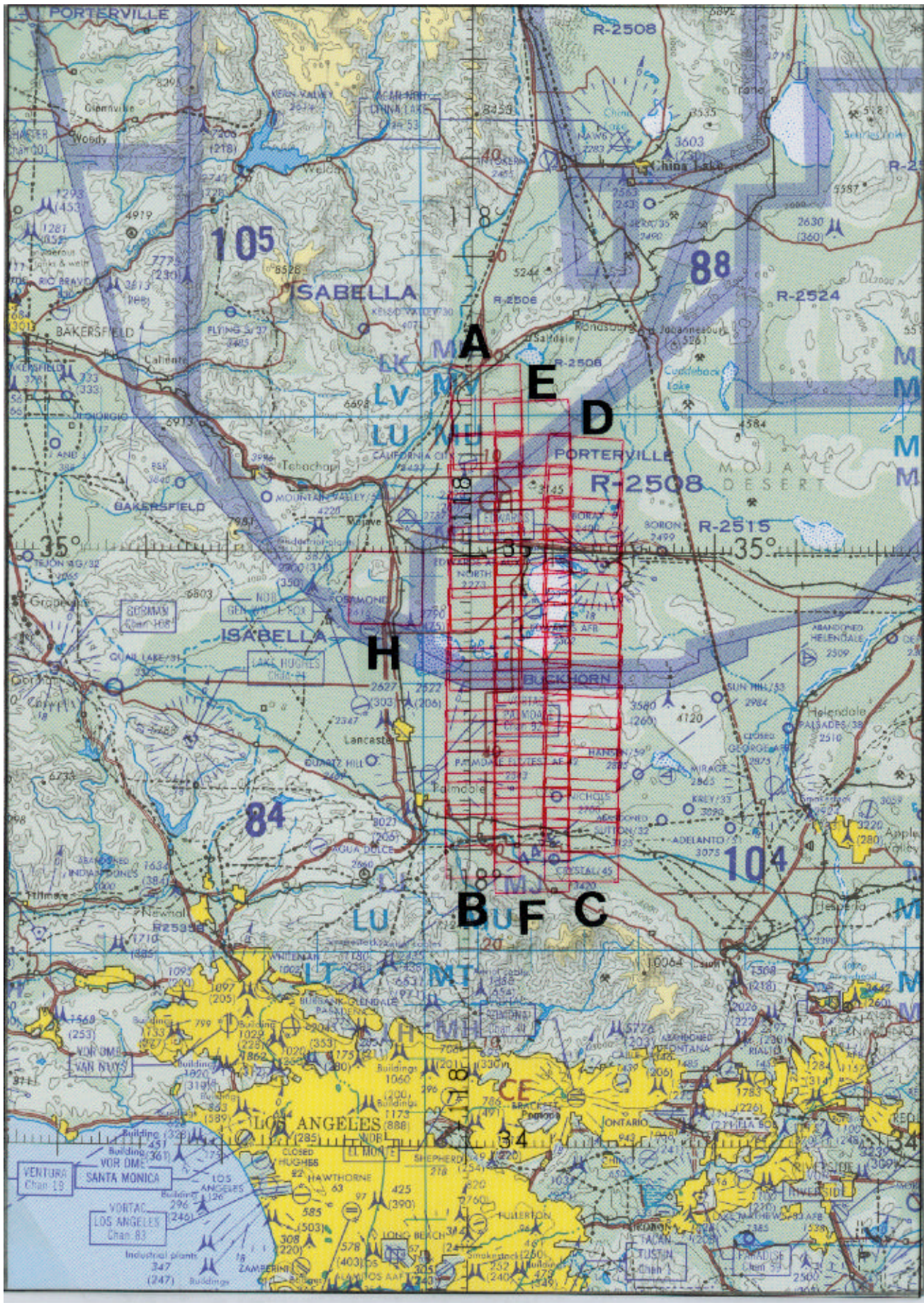


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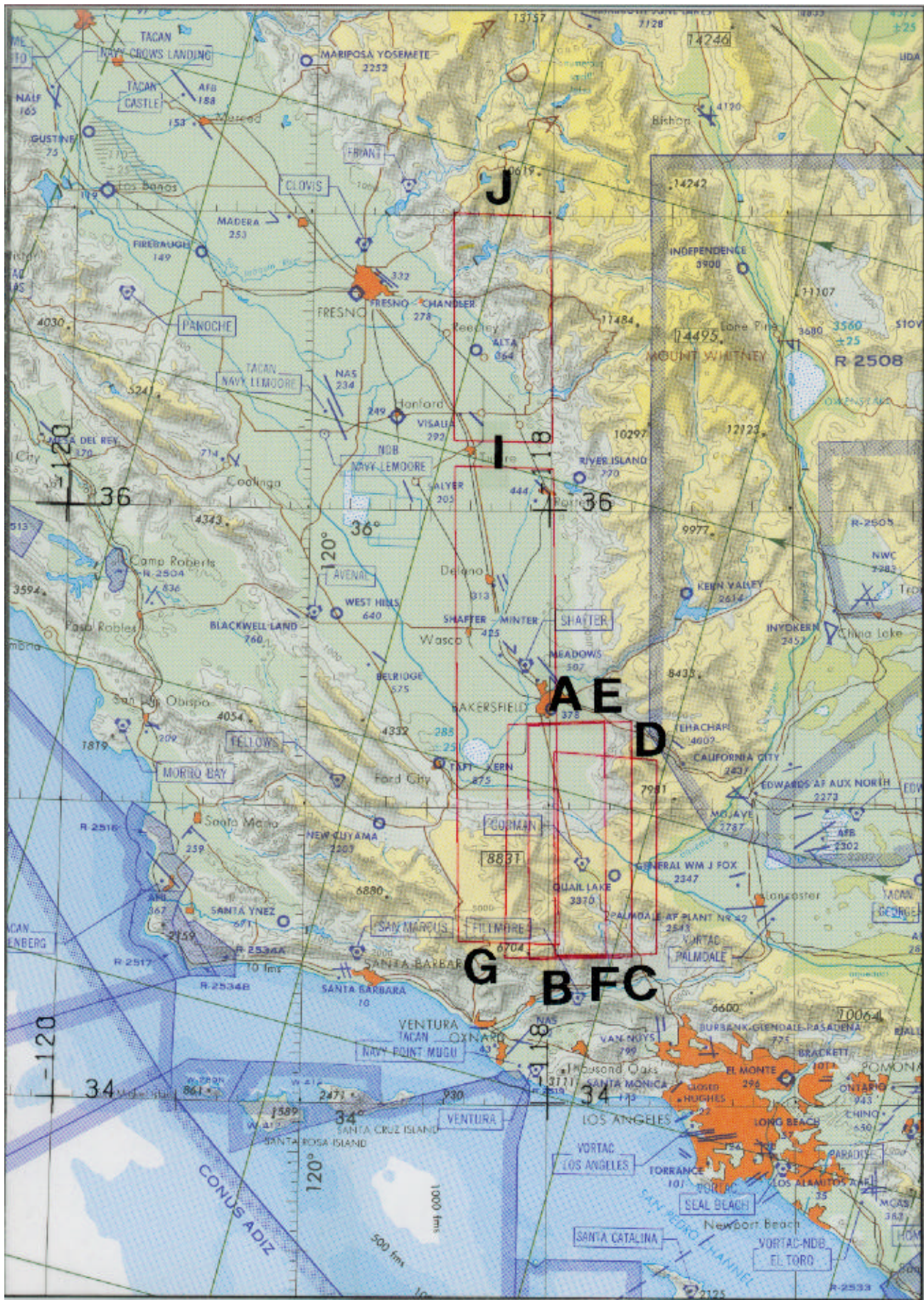
ONC G-18

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